**Question 1**

1. Design an architecture which incorporates the following client needs. The clients know that his whole setup is going to evolve constantly. Include a cloud formation template for programmable infrastructure for your design. Needs to be scalable and flexible Needs to have low latency for SEO purposes Needs to be cost effective

Comments - Preparing the initial set up for Demo - The presentation contains the initial architecture draft of the problem. The cloud formation template is Initial\_Template.json . I have created a sample Website to demonstrate the demo . The website is coded in php and also contains a .sql file which needs to be uploaded to the MY SQL DB. In the initial phase of the assignment , I had limited knowledge on hosting website . Hence I did some research and selected XAMPP V3.2.4 (which is a open source webserver solution) .The website contains login page and Product page (which allows user to enter product detail, upload thumbnail , video and image).

Requirement Analysis

1. The web shop is hosted on e-commerce tool Magneto. Did some research and found Magneto v2.1.2 is compatible with DB MySql V 5.7.X
2. The RDS set up in AWS needs to be scalable and flexible ( MultiAZ set up and configuring MasterDB and Replica DB). I did some investigation and found Amazon Aurora MySQL DB is compatible with MYSQL and flexibility to control autoscaling, low latency and is cost effective. However this solution needs to tested with the Magneto tool. In Auroa MYSQL DB we can use the below paraments in the Cloud Format template to enable autoscaling after the DB usage crosses a particular threshold.
3. I analysed the problem statement and realised CloudFront can be used to perform low latency for SEO purpose.However for the assignment , I need to create a EC2 instance where I will be hosting the WebServer and establishing a connectivity with RDS instance.

Steps to migrate MYQSL DB to RDS -

1. This can be done using , AWS Database Migration Service or by using MySQL Workbench tool. For my demo I used the MYSQL dump and imported to the RDS MYSQL Db using MYSQL workbench. I have also gone through the steps mentioned in AWS DB migration service.

Reference File attachments -

**Question 2**

1. After releasing the new architecture, business takes on, and the client decides to add customer reviews. Do you need to alter your architecture? And if so, how?

Comments - TO add customer review , there need not be any change in the architecture , however this would require a additional Table in the Database instance. The columns of the TABLE\_Comments will be [Cutomer\_Name,Product\_id,Comments] When user will be entering comments on the product web page , it will be posted to the database table and will be retried from the database when the product page is opened by users.(I could not complete the web page design for this reqirement).

**Question 3**

1. At some point, one of the customer employees is getting very good at creating vlogs, and the client wants to give customers the opportunity to upload videos with their reviews. They want to store the thumbnails and videos for later processing, and they want to show thumbnails of the videos underneath the product pages. Alter your architecture to process and store these videos.

**Comments -** They want to store the thumbnails and videos for later processing, and they want to show thumbnails of the videos underneath the product pages. Alter your architecture to process and store these videos.

Here there should be a source bucket and a target backet. The user should upload the videos in the S3 bucket (source folder) and a lamda python function can run to genrate the thumbnails of the video files .

For storing the video there should be a S3 bucket. For Processing the files there should be a lamda function with Create objects trigger so that

For each product page the video should be picked up fronm the source location and the respective thumbnails should be picked up from the target folder in S3 containing the thumbnails. How to design the product Web Page We have to design a Event-Driven Data Ingestion with AWS Lambda (S3 to RDS) In the RDS we can have two tables A) Prod\_Specification table containing the productid ,Video, Thubnail column the video and Thumbnail column contains the S3 directory paths. B) User\_Comment\_Prod table containing the Productid, userName,Comment (prodcutid NotNull and references product\_Specification table). Prod\_Specification gets written when a user uploads a video in particular product webpage.

**Question 4**

1. At some point, some clients uploaded non-compliant video's and which created a huge marketing issue. The client now wants to screen the uploaded video's before putting them online, but with minimal costs. Alter your architecture to be able to screen and process these video's.

**Comments -**

Amazon S3 provide read-after-write consistency for PUTs to new objects (new key). Response (Get after overwrite PUT (PUT to an existing key)) changes the existing object so that a subsequent GET may fetch the previous and inconsistent object. I configured the S3 Bucket policy and CORS Configaration to enable GET,POST and PUT methods. I also designed a PHP page to upload the videos to S3 , however I am getting error while S3Client in the PHP page. Refer to Bucket.php for code. Solution 1 :We can set up logic in the PUT call to check the video consistency of the video. Solution 2: I researched and found the S3 comes with Python API distribution. Hence I have designed a program which can be scheduled from the Web Server (CRON JOB), This program navigates to the S3 instance , lists down the files uploaded and filters out the files which don’t contain .Mp4 and .3GP extension. Once the report is generated , the program can send an email to group highlighting the incorrect files uploaded.